

Parks Canada – Field, B.C. Membrane Pretreatment



IT WAS JUST ONE SMALL TOWN OUT WEST, BUT FOR ITS NEW WASTEWATER TREATMENT PLANT IT HAD SOME BIG EXPECTATIONS AND CHALLENGES.

Field, B.C., nestled in the Rocky Mountains, was originally a railroad town that serviced the trains for their final push over the continental divide. With a permanent population of about 300 people, Field is now mainly a tourist stop in Canada's Yoho National Park, one of Canada's national parks made a World Heritage Site in the early 1980's. Thousands of visitors flock to this area each year to explore the rugged Rocky Mountains and take in the breathtaking scenery of the area.

When it came time to design a new wastewater treatment plant for Field, the seasonal rise in population during the summer months added to the challenge of meeting Parks Canada's stringent mountain effluent targets. The goal of the new wastewater treatment plant was to protect this pristine wilderness area by setting the effluent target as close as possible to the natural composition of the receiving water bodies. With this in mind, Parks Canada reviewed the latest in advanced treatment technology and opted for a membrane bioreactor system (MBR).

The MBR technology requires fine screening as a pre-treatment. The membranes require protection from trash solids,

PROBLEM: Protect New Membrane Bioreactor
SOLUTION: Drumscreen Monster®

as well as hair and other fine solids that can plug membrane passageways. Removing these solids requires screening, most commonly in the 500 – 1,200 micron range.

The effluent at Field can be best characterized as variable. During the summer months the roads are full of vacation travelers arriving by cars and tour buses using Field as a pit stop, thereby putting a huge demand on the wastewater treatment plant, while during the sub-zero, mid-winter period, usage falls dramatically due to the small numbers of permanent residents in Field. With low temperatures and short sewer lines there is little natural breakdown in organic solids before entry to the WWTP. Also, as a result of the low flow and long residence times in lift station sumps, the solids settle creating a significant variation in solids concentration from the standard 300 ppm.

At the Field WWTP, a JWC Environmental Drumscreen Monster and a JWC PLT screenings washer/compactor were installed to process the highly variable influent and protect the MBR system.



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Since its founding in 1973, JWC Environmental has become a world leader in solids reduction and removal for the wastewater industry with its Muffin Monster grinders and Monster Separation Systems for screening, compaction and washing. JWC also solves challenging size reduction and processing problems in commercial and industrial applications through its Monster Industrial division. JWC Environmental is headquartered in Costa Mesa, California, and has a global network of representatives, distributors and regional service centers to provide customer support. For more information, visit JWC Environmental at www.jwce.com.

The Drumscreen Monster was fitted with 800 micron (opening size) stainless steel mesh for the primary separation. This screen element, due to high porosity, allows for a high hydraulic process rate in a compact physical size. A special in-feed header on this screen comfortably handles both the high flow and the low flow/high solids concentration conditions efficiently, while maintaining the required separation. The Drumscreen Monster also processes the highly concentrated compactor pressate that is reintroduced by a separate pump system. The Drumscreen Monster is self-cleaning allowing for hands-free operation. All sequencing and cleansing operations are completely automated and integrated with a SCADA system thereby eliminating the need for a full time WWTP operator.

The solids from the rotary screen, which include all the typical non-biodegradable matter mixed with a much higher than normal biodegradable fraction (fecal, tissue), are accepted by the PLT press. The screened organic components are effectively broken up and returned to the plant for further biological processing, while the remaining inorganic solids are discharged, in compacted form, to a bagging device. The bagging device includes an 80 meter long plastic tube that allows for practical isolation of the rejected solids being disposed of from the plant operator.

The function of the JWC screen and press combination is to continuously protect the membranes. In yearly inspections of the bioreactor, no contaminants have been detected thereby proving the effectiveness of the JWC equipment in this application.

APPLICATION DETAILS

Location: Field, BC, Canada

WWTP Capacity: 105,000 GPD

Screen System Capacity: 400 GPM

Feed System: Dual Pump Lift Station

Engineer: Associated Engineers Calgary, AB

Contractor: Nason Contracting Group Edmonton, AB

Commission Date: April, 2004

